

Applying Iterative Design Principles to a Live Product



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Step 1
Select KPIs
&
Evaluate Previous
Multivariate
Experiment Results

Select KPIs for Flyber Analyses

- For the data available, which KPI(s) best match Flyber's business model?

1) I would measure the conversion between each step of the event process in the app:

- a) From "open" to "amount_of_users".
- b) From "amount of users" to "search".
- c) From "search to "begin_ride".

Amount of distinct session_id in the previous step divided by the amount of distinct session_id in the current stage (event_type) multiplied by 100 (so we get a percentage). After a more detailed analysis can be done, filtering by age, neighbourhood or other category.

- How would you calculate these KPI(s) using the available event data logs?

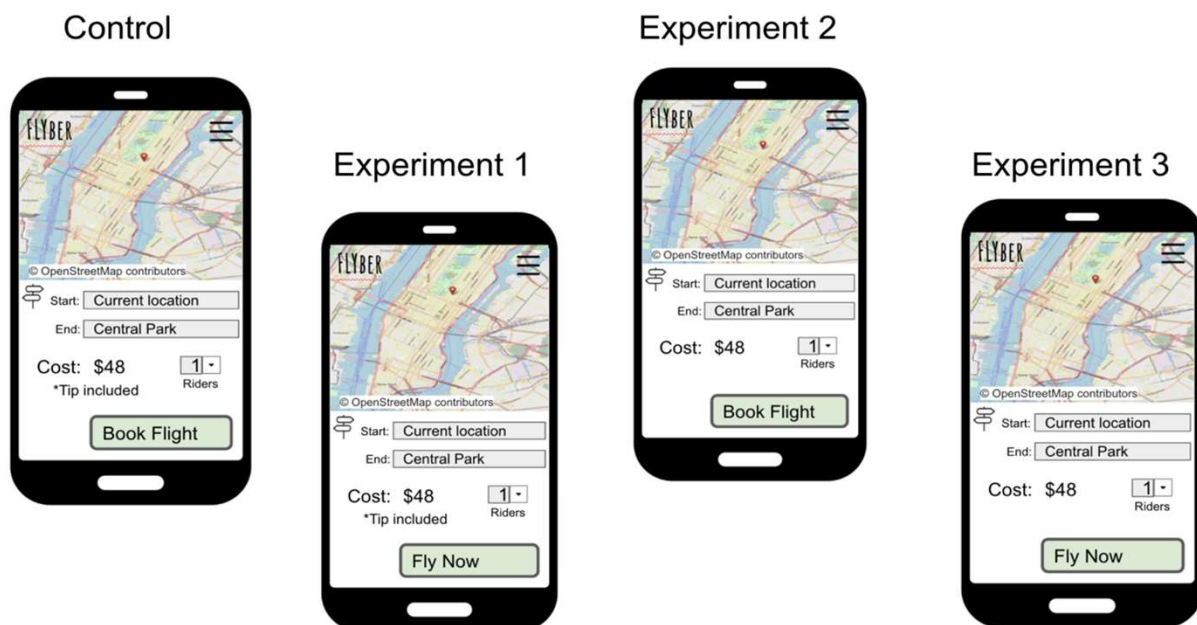
Example: Amount of distinct session_id in the "search" event divided by the distinct amount of session_id in the "begin_ride" event type and then multiplying it by 100.

$$\text{Distinct}(\text{session_id (event=begin_ride)}) * 100 / \text{Distinct}(\text{session_id (event=search)})$$

- List other KPIs that might be important to Flyber but are not calculable based on available data
 - Price by ride.
 - Amount of passengers by ride.
 - Customer satisfaction grade.
 - Average ride duration.
 - Idle time between rides for each plane.

Describe the First Multivariate Experiment

- In this multivariate experiment, the control group was compared to other three experiment groups.
- Here, we are going to compare the conversion rate variation when making a modification compared to the control group.
- At the end, we are going to perform a t-test in order to prove whether the results are significant or not.



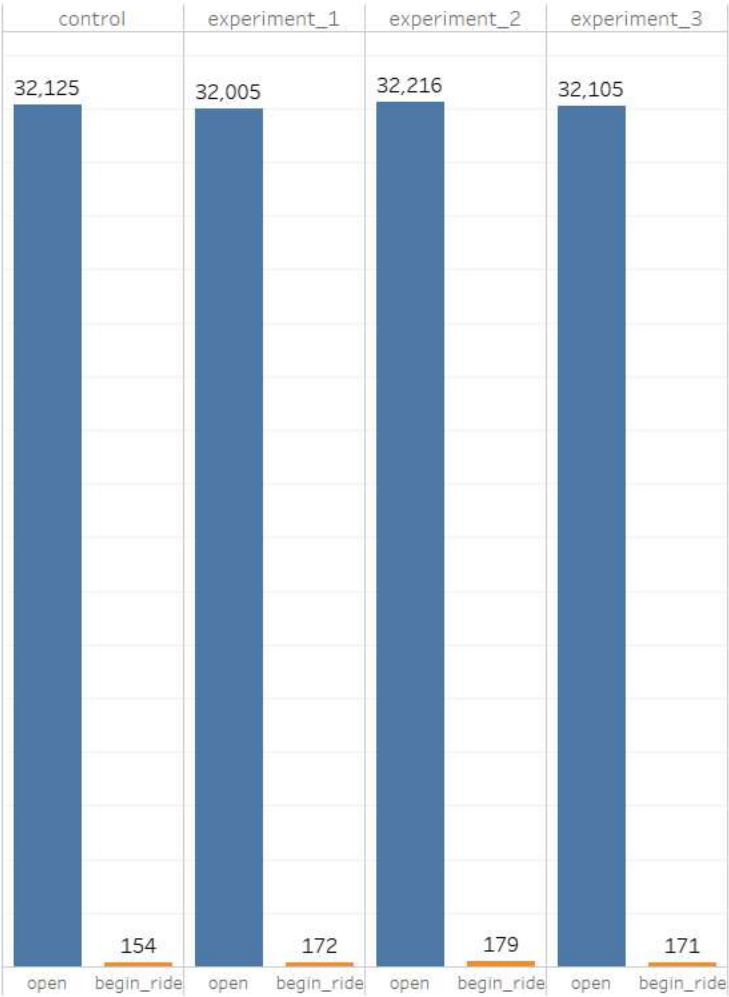
Review Multivariate Test Results: Visualization

- As we can see in the table funnel in and in the bar chart below, all the three experiments have higher conversion rates than the control group, when booking a flight.

Conversion rate funnel

Experiment Group	Event Type	User_amount	Diff.(%)
control	open	32,125	-99.52%
	begin_ride	154	
experiment_1	open	32,005	-99.46%
	begin_ride	172	
experiment_2	open	32,216	-99.44%
	begin_ride	179	
experiment_3	open	32,105	-99.47%
	begin_ride	171	

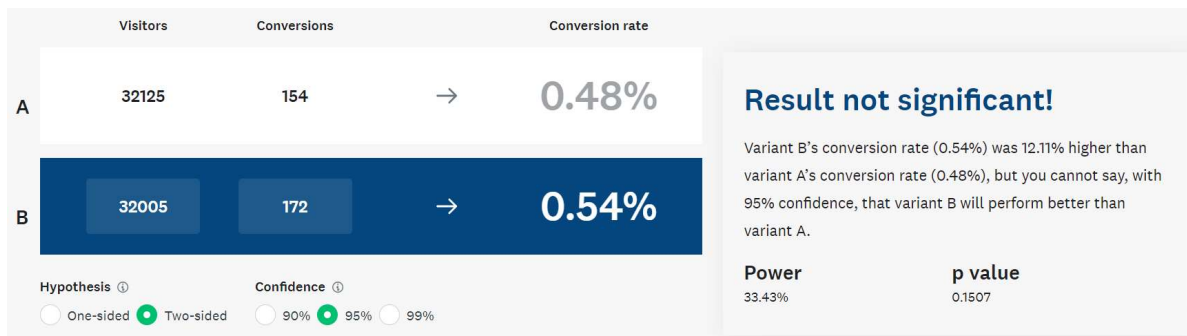
Conversion in units



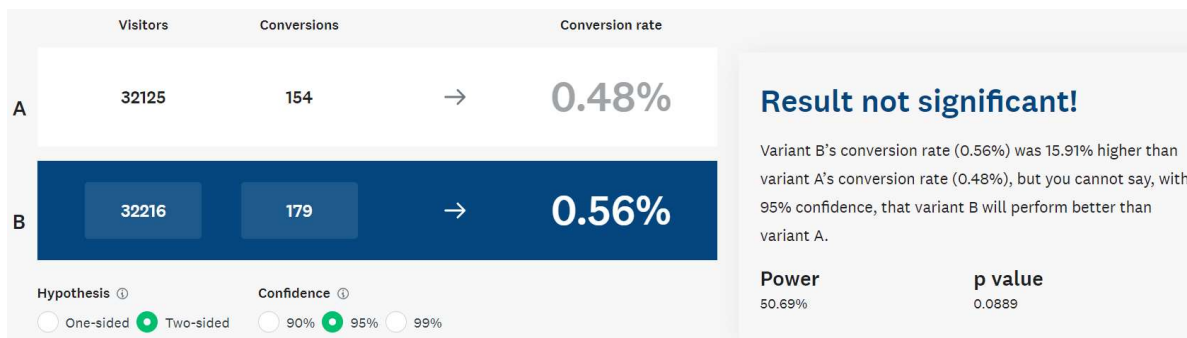
Review Multivariate Test Results: Significance Test

- Below we compare the control group against the first experiment group, the second experiment group and the third experiment group (ordered from top to bottom). In the screenshots it is possible to see the conversion rate for each group and the p-value for two sided hypothesis with confidence interval of the 95%. As we can see, none of the experiments bring significant improvements compared to the control group, so we would not implement any change.

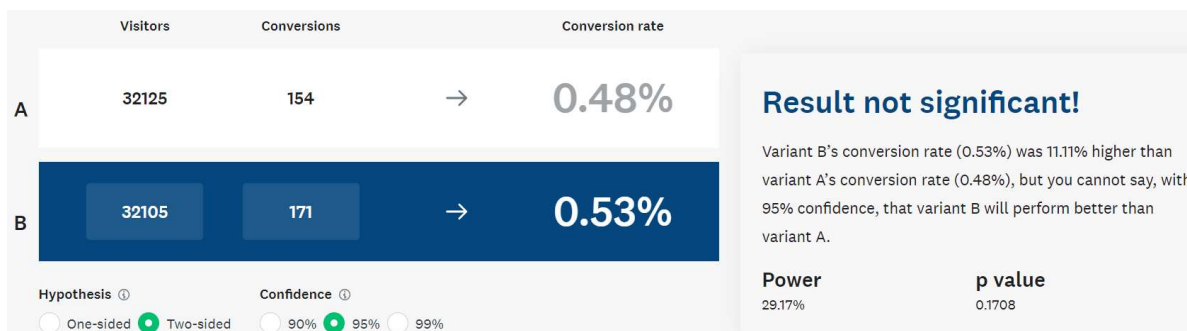
Control group vs experiment group 1



Control group vs experiment group 2



Control group vs experiment group 3





Step 2

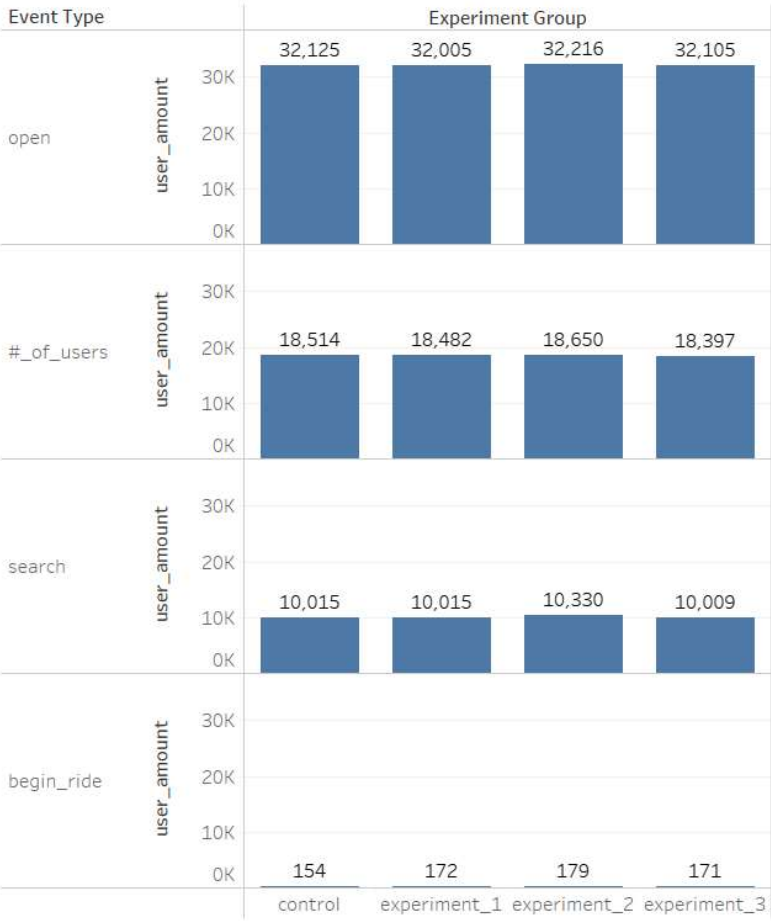
Funnel & Cohort Analyses

User Funnel

Identifying the different stages the user funnel

- Based on the event types in the available data, we are going to analyze the 3 steps that a user can take from opening the app to the final booking of a ride.
- Below, a graph and a table showing the funnel from event type to event type step by step:

Conversion rate of users booking a flight



Conversion rate funnel

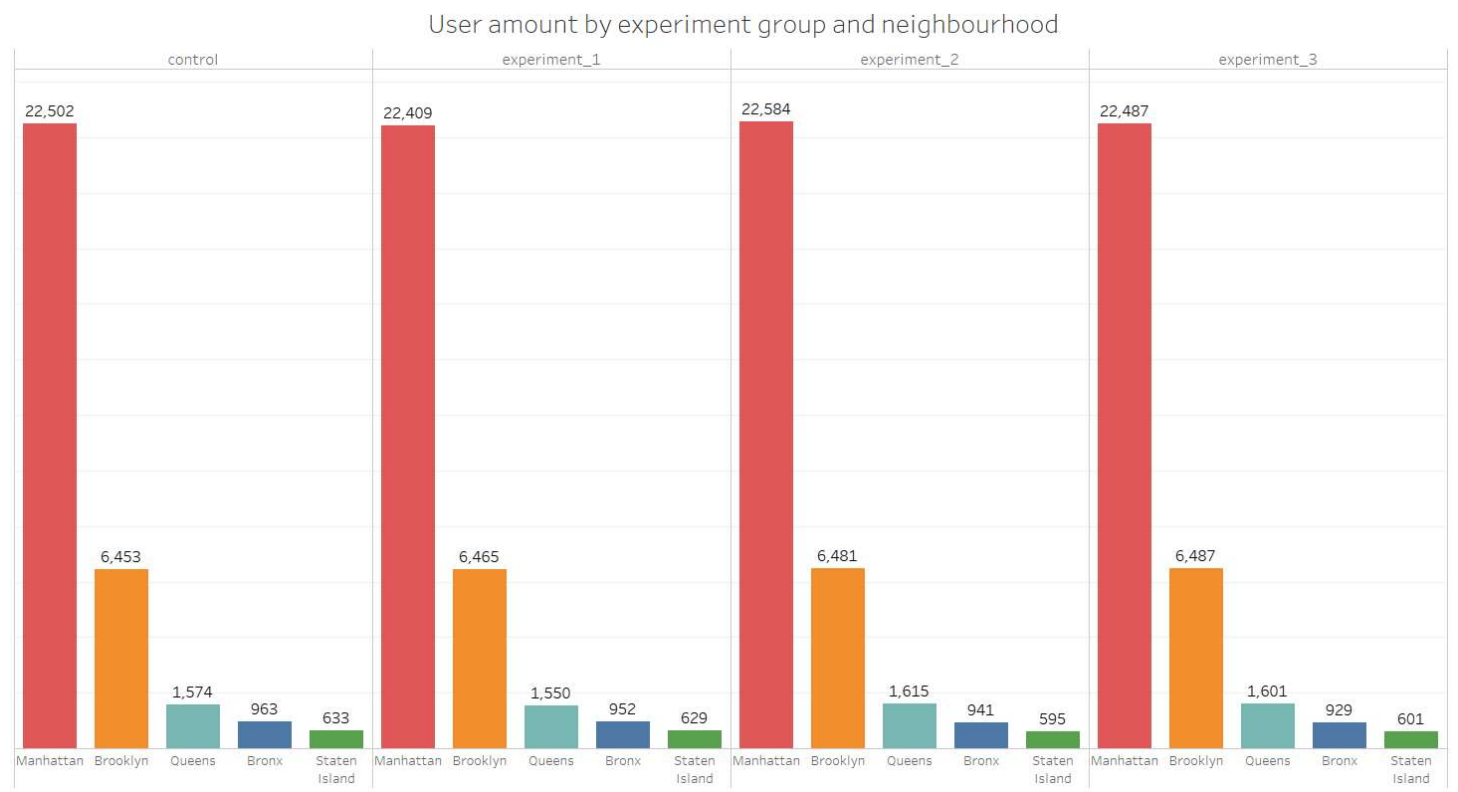
Experiment Group	Event Type	User_amount	Diff.(%)
control	open	32,125	
	#_of_users	18,514	-42.37%
	search	10,015	-45.91%
	begin_ride	154	-98.46%
experiment_1	open	32,005	
	#_of_users	18,482	-42.25%
	search	10,015	-45.81%
	begin_ride	172	-98.28%
experiment_2	open	32,216	
	#_of_users	18,650	-42.11%
	search	10,330	-44.61%
	begin_ride	179	-98.27%
experiment_3	open	32,105	
	#_of_users	18,397	-42.70%
	search	10,009	-45.59%
	begin_ride	171	-98.29%

User Segments

- In the available data we can identify age and neighbourhood as the two main demographic attributes that allow for segment analysis.

Neighbourhood

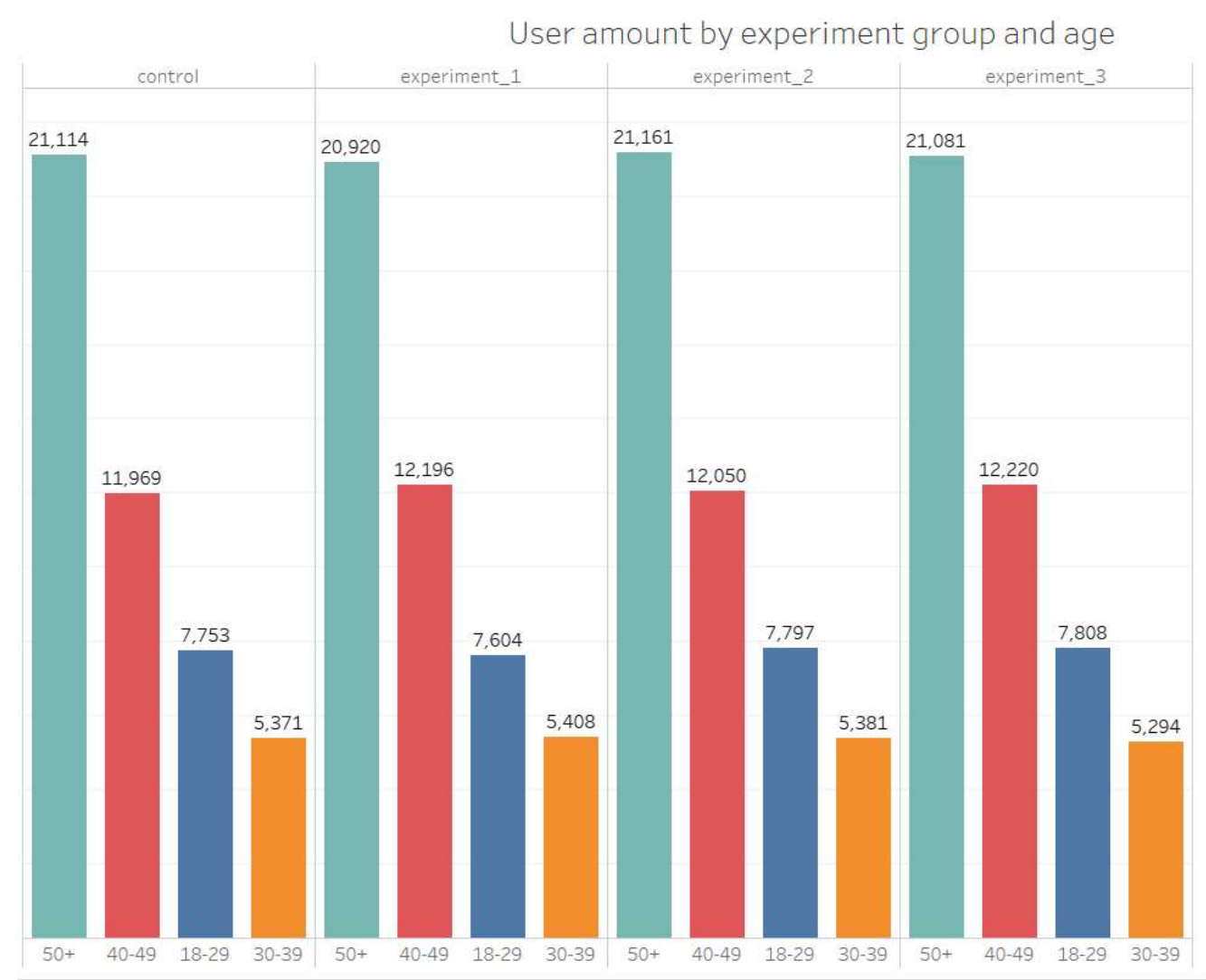
The segment group with the largest amount of users is the neighbourhood of Manhattan (see bar plot below).



User Segments

Age

As we can see on the plot below, the group with the largest amount of users is the group with people older than 50 years.



Segment Analysis of Funnel

Identify Opportunities for Improvement

- As we can see, the most dramatic drop takes place when moving from “search” to “begin_ride”, so this point would be where we should focus most.
- Additionally, the highest conversion rate, from opened sessions to actual rides, takes place in the Bronx, which has the lowest drop (in percentage). On the other hand, the highest drop takes place in Queens, so here we would have an improvement opportunity.

Funnel by neighbourhood

User Neigh..	Event Type	Session amount	Diff. (%)
Bronx	open	6,693	
	#_of_users	2,758	-58.79%
	search	1,328	-51.85%
	begin_ride	23	-98.27%
Brooklyn	open	45,583	
	#_of_users	19,059	-58.19%
	search	9,103	-52.24%
	begin_ride	135	-98.52%
Manhattan	open	158,366	
	#_of_users	66,471	-58.03%
	search	31,948	-51.94%
	begin_ride	474	-98.52%
Queens	open	11,172	
	#_of_users	4,628	-58.58%
	search	2,257	-51.23%
	begin_ride	31	-98.63%
Staten Island	open	4,341	
	#_of_users	1,832	-57.80%
	search	867	-52.67%
	begin_ride	14	-98.39%



Conversion rate by neighbourhood

User Neigh..	Event Type	Session amount	Diff. (%)
Bronx	open	6,693	
	begin_ride	23	-99.66%
Brooklyn	open	45,583	
	begin_ride	135	-99.70%
Manhattan	open	158,366	
	begin_ride	474	-99.70%
Queens	open	11,172	
	begin_ride	31	-99.72%
Staten Island	open	4,341	
	begin_ride	14	-99.68%

Segment Analysis of Funnel

Identify Opportunities for Improvement

- For the “age” segment, we can see that the highest drop takes place for the people who are older than 50 years. This should be one of the most important points to focus on, as this group of people represents more than the 50% of the sessions registered.
- On the other hand, the people between 40-49 years old are who have the highest conversion rate among the registered sessions.

Funnel by age

Age	Event Type	Session amount	Diff. (%)
18-29	open	33,878	
	#_of_users	14,222	-58.02%
	search	9,138	-35.75%
	begin_ride	126	-98.62%
30-39	open	22,760	
	#_of_users	9,477	-58.36%
	search	6,019	-36.49%
	begin_ride	100	-98.34%
40-49	open	56,256	
	#_of_users	23,566	-58.11%
	search	15,090	-35.97%
	begin_ride	256	-98.30%
50+	open	113,261	
	#_of_users	47,483	-58.08%
	search	15,256	-67.87%
	begin_ride	195	-98.72%



Conversion rate by age

Age	Event Type	Session amount	Diff. (%)
18-29	open	33,878	
	begin_ride	126	-99.63%
30-39	open	22,760	
	begin_ride	100	-99.56%
40-49	open	56,256	
	begin_ride	256	-99.54%
50+	open	113,261	
	begin_ride	195	-99.83%

User sessions by age

Age	% of total	Session nr.
50+	50.08%	113,261
40-49	24.87%	56,256
18-29	14.98%	33,878
30-39	10.06%	22,760



Step 3

Hypothesis & Next
Steps

Review Qualitative Data

- Read user interviews to understand “why” any funnel under-performance seen in Step 2 might occur.

- It seems that one of the biggest issues is the process to hire the service. Older people have difficulty to hire a flight due to the app usage or the lack of phone service or even to hire it by texting or audio messages. This is why, as we saw in the step 2, the highest drop off in the conversion rate takes place among the customers older than 50 years.

- List your hypothesis for what customer need is being under-served.

- The option to book a ride through a phone call.

- Provide 3 or more quotes as evidence for this hypothesis

- „I call up for local pilot, Bob. He’s not always available but i do not need to fiddle around with an app and hitting tiny buttons” – Charlie Johnson, 75 y.o.

- „I just hail a taxi or tell my phone to call a cab to go to a certain address (I'm always on the phone, so I just use voice commands with my phone most of the time)” – Kierran Blackburn, 55 y.o.

- “ Luckily, my daughter was around to help me book the ride” – Robt 67 y.o.

Suggested Features & Experimentation Plan

- We believe that the conversion rate of a 0.17% will increase among the users older than 50 years by including a call/message service to make ride bookings. This increase in the conversion rate will mainly happen among the mentioned users age cohort, which at the same time, will mean a big impact, since this age cohort is the one that most uses Flyber.

- Suggested features:

1- Call service for booking.

2- SMS service for booking.

Control group: current system of booking (app).

Experiment group 1: users having the possibility to book just through phone call.

Experiment group 2: users having the possibility to book just through SMS.

- Users affected by the experimental changes: users older than 50 years.
- Additional metrics that would be helpful to collect from suggested features:
 - Average time between “search” event and making the flight reservation for each group listed above.
 - Average ride price.
 - Most common time frame in which this features are used.



Appendix

Raw Data

Additional Info

The exploratory analysis that was mainly made in Tableau Public can be found in the following link:

[Exploratory analysis – iterative design](#)